Improved Vitamin D status and reduced incidence of osteochondrosis in pigs fed a diet fortified with 50 µg/kg of 25-hydroxy-cholecalciferol (Hy•D®)

Sugiyama et al., Animal Science Journal (2013) 84, 341–349

Objective

To evaluate the effect of 25-hydroxy-cholecalciferol (Hy-D®) on the development of osteochondrotic lesions in the articular cartilage of pig bones compared to vitamin D3 at equivalent dose.

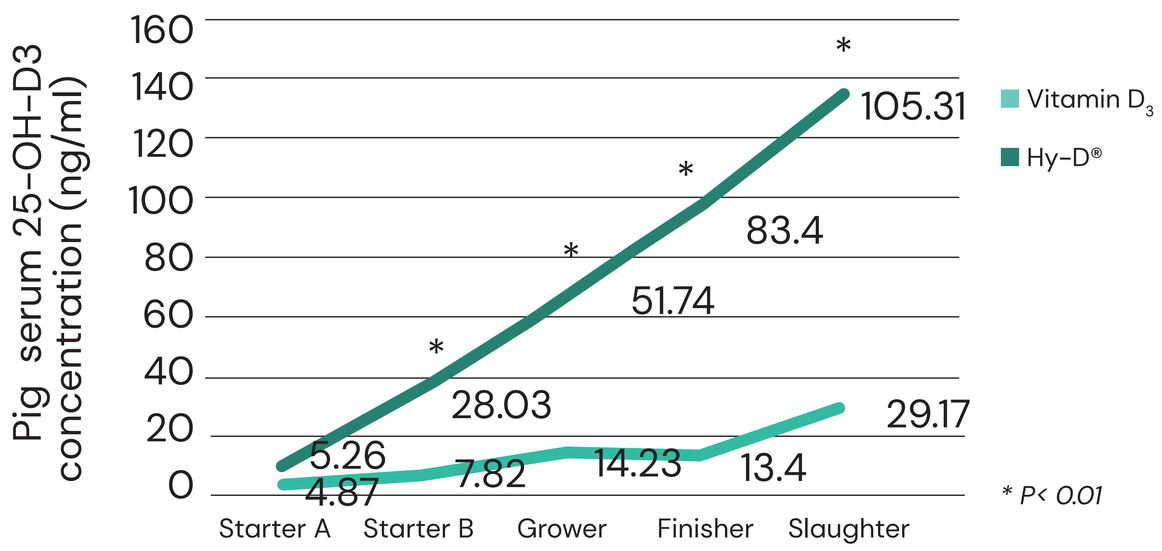
Context

- Osteochondrosis is considered to be the primary cause of leg weakness in modern swine production
- Strengthening bone and cartilage remains the one single method that may prevent osteochondrosis

Treatments: Vitamin D_3 = Vitamin D_3 at 1,800 – 1,500 IU/kg feed; Hy-D® = Vitamin D_3 + 50 µg/kg of 25-OH-D_3

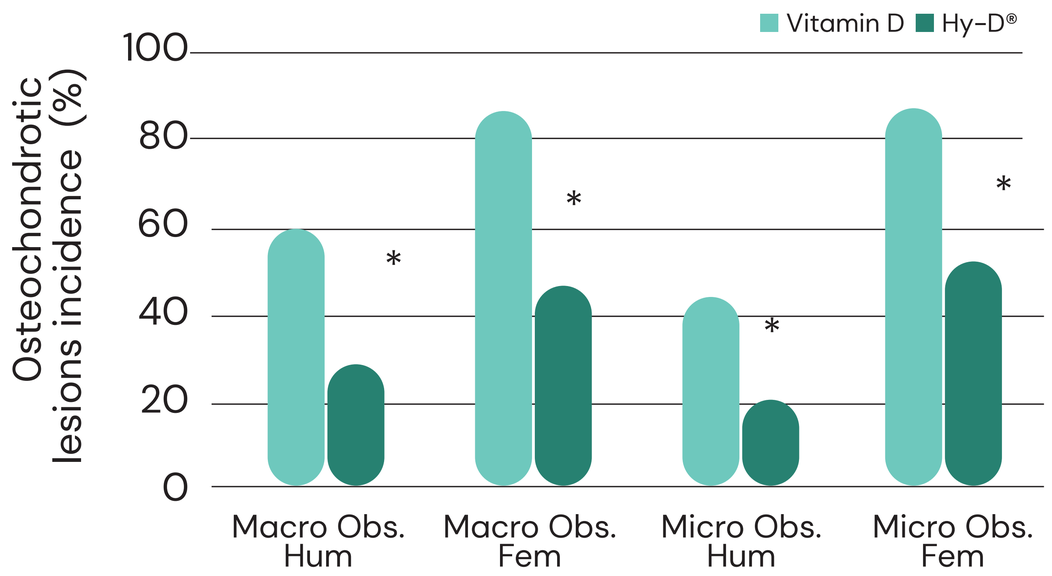
Results

25-OH-D3 in Blood Serum



Significant increase in the serum concentration of 25-OH-D3 in pigs fed diets supplemented with Hy-D®

Incidence of Osteochondrosis

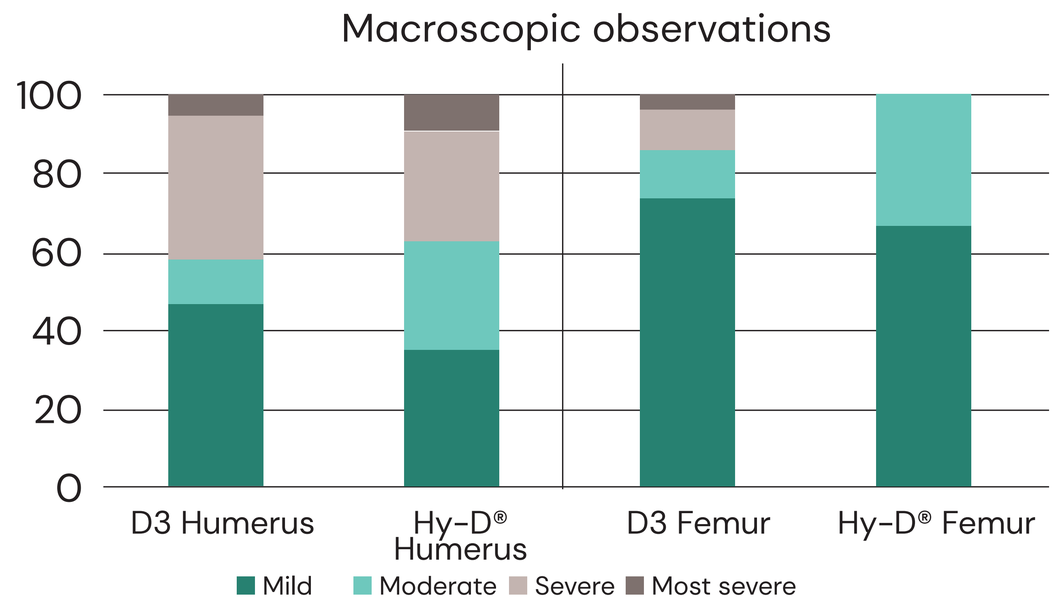


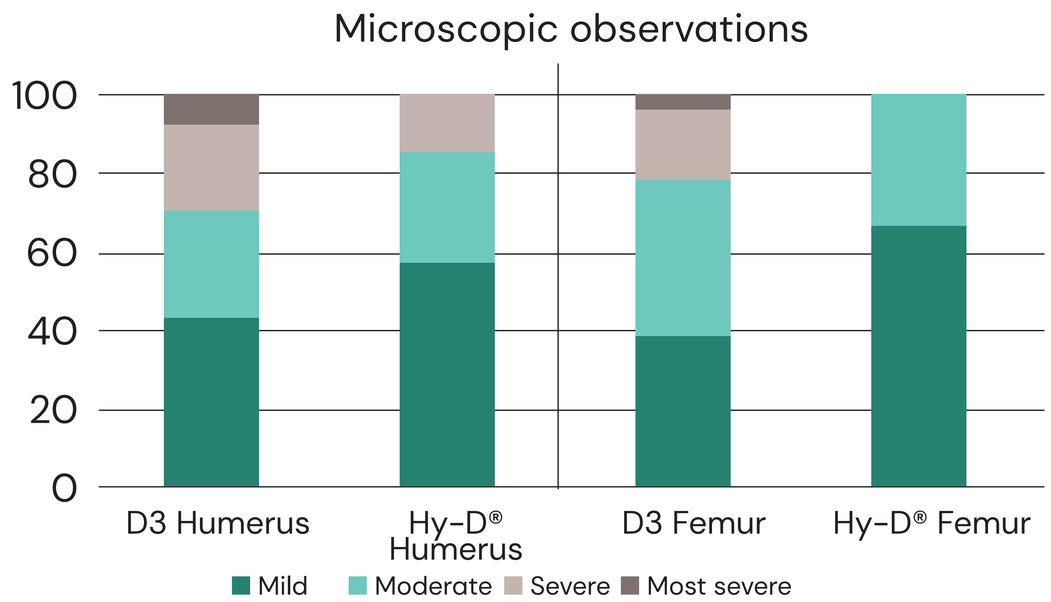
Dietary supplementation with Hy-D® reduced significantly incidence of osteochondrosis lesion

** P< 0.05*

Severity of Osteochondrotic Lesions

Severity of lesions on articular cartilage of Humerus and Femur was significantly lowered in the Hy-D® -treated group





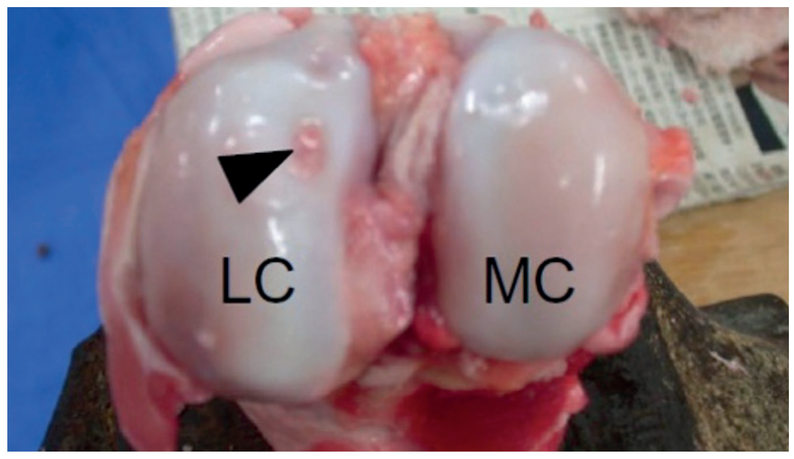


Fig.1 AC on Femur from Hy-D® group classified as **moderate**:
- large hole (arrowhead) observed on the Lateral Condyle (LC)
- smooth and shiny Medial Condyle (MC) without any abnormalities

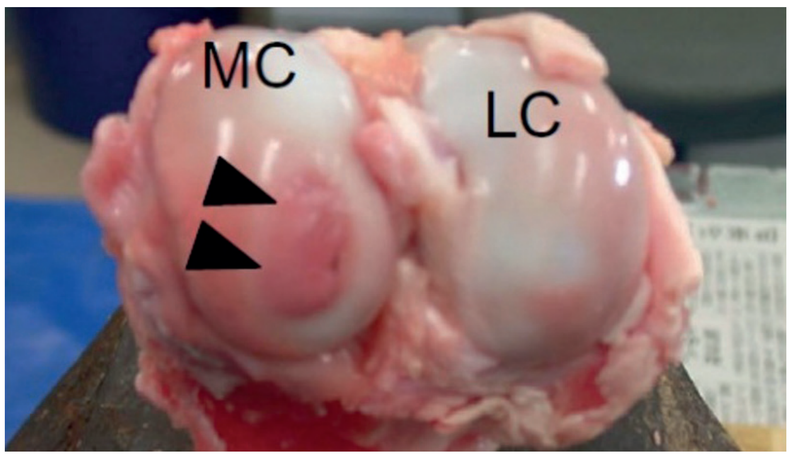


Fig.2 AC on Femur from Control group classified as **severe**:
- AC on the MC distended over a broad region (arrowheads).
- smooth and shiny LC without any abnormalities.

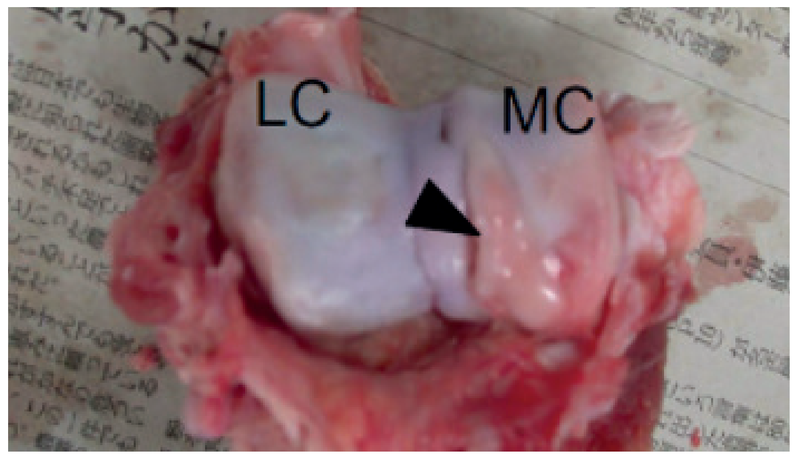


Fig.3 AC on Humerus in Control group classified as **severe**:
- AC on the MC is distended and there is a crack (arrowhead).
- smooth and shiny LC without any abnormalities.

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